REMARKS

Applicant has reviewed the Office Action mailed on July 28, 2004, as well as the art cited. Claims 13, 15, and 23-26 have been amended. Claims 1-27 are pending in this application.

Claim Objections

Claim 26 was objected to under 37 CFR 1.75 as being a substantial duplicate of claim 25. Applicant respectfully traverses this objection. Claims 25 and 26 differ in at least one limitation, namely, claim 25 calls for "a matrix for mapping image data" and claim 26 calls for "a means for mapping the image data." Claims that are written in means-plus-function language have a different scope from claims that are not in means-plus-function form. Moreover, Claim 26 has been further amended to clarify a difference in scope by deleting at least one claim limitation. Therefore, claim 26 is not a substantial duplicate of claim 25. Withdrawal of the rejection is respectfully requested.

Claims 15-22 were objected to under 37 CFR 1.75(a) and (d)(1) as failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. Regarding claim 15, the Examiner noted that there is no antecedent basis for "the high range" and "the low range". Applicant respectfully disagrees with the Examiner's assertion that there is no antecedent basis for these terms. One of ordinary skill in the art would understand that a range has a high end and a low end and thus referring to these ends of the range is proper. However, to move this application along, Applicant has amended independent Claim 15 to remove the limitations "high" and "low" on the range, thereby rendering the objection moot. Withdrawal of the objection is respectfully requested.

Rejections Under 35 U.S.C. § 102

Claims 1-20, 22-24 and 27 were rejected under 35 USC § 102(b) as being anticipated by Sobol (U.S. Patent No. 5,854,859). Applicant respectfully traverses the rejection.

Claim 1 is directed to a "method of processing color image data" that comprises "examining the color components of a pixel in the image" and "selectively applying a matrix to the color components of the pixel to create an output color component." This matrix is applied "only when the pixel is not in a dark area of the image." Sobol does not teach or suggest this claimed method.

Sobol does not teach or suggest examining the color components of a pixel and selectively applying a matrix to the color components (plural) to create an output color component (singular). Rather, Sobol is directed to a different kind of image processing. Sobol appears to apply a matrix to either a single color component or a single lightness coordinate value across a number of pixels to produce a single value with improved contrast. This differs significantly from the processing of the color components of a pixel with a matrix as called for in the claim. See, Sobol at Col. 4, lines 31-37. Therefore claim 1 is not anticipated by Sobol.

Claims 2 and 3 depend from claim 1 and are also allowable at least for the reasons identified above. Withdrawal of the rejection of claims is respectfully requested.

Claim 4 is directed to a "method of processing color image data contained in an array of pixels." The method comprises "reading the color components of a pixel" and "transforming the color components of the pixel with a matrix when any of the color components of the pixel are greater than the threshold and otherwise preserving the pixel." Sobol does not teach or suggest this claimed method.

Sobol does not teach or suggest transforming the color components of a pixel when any of the color components are greater than a threshold. Further, Sobol does not teach or suggest preserving the pixel when none of the color components exceed the threshold. In Sobol, it appears that each color component is handled separately. Therefore, claim 4 is not anticipated by Sobol.

Claim 5 depends from claim 4 and is also allowable at least for the reasons identified above.

Claim 6 is directed to a method of "processing color image data contained in an array of pixels." The method comprises:

(a) defining at least one threshold;
(b) defining a first and a second matrix;
(c) reading at least 3 color components for the pixel;
(d) applying the first matrix to the color components of the pixel to create an output color component when any of the color components are greater than the threshold, and;
(e) otherwise applying the second matrix to the color components of the pixel to create the output color component.

Sobol does not teach or suggest reading at least 3 color components for the pixel, applying a first matrix to the color components of the pixel when any of the color components exceeds a threshold and otherwise applying a second matrix to create the color component. Sobol does not apply one of two matrices to create an output color component from the 3 read color components as called for in the claim. Therefore, claim 6 is not anticipated by Sobol.

Claims 7-12 depend directly or indirectly from claim 6 and are also allowable at least for the reasons identified above.

Claim 13 is directed to a scanner. The scanner comprises:

a matrix for transforming the raw digital data for color components for each of a plurality of pixels adjacent a pixel into a corrected color component for that pixel;
the scanner configured to output the corrected color component for that pixel only when the raw digital data for at least one of the color components of that pixel is greater than a pre-selected value.

Sobol does not teach or suggest a scanner with a matrix that transforms raw digital data for color components for each of a plurality of pixels adjacent a pixel into a corrected color component for that pixel. Further, Sobol does not teach or suggest a scanner that outputs the corrected color component for that pixel only when the raw digital data for at least one of the color components of that pixel is greater than a selected threshold. Therefore, claim 13 is not anticipated by Sobol.

Claim 14 is directed to a method of processing color image data contained in an array of

pixels. The method comprises:

> defining a first threshold and a second threshold, where the first threshold
> is larger than the second threshold;
> defining a first and a second matrix;
> (a) reading the color components of a pixel;
> (b) applying the first matrix to the color components of the pixel when any
> color component is greater than the first threshold;
> (c) applying the second matrix to the color components of the pixel when
> all the color components of the pixel are less than the second threshold, and;
> (d) otherwise applying an interpolation between the first and second
> matrix to the color components of the pixel; repeating steps (a) through (d) for
> each pixel in the array.

Sobol does not teach or suggest the method of claim 14. Sobol does not teach or suggest

reading color components for a pixel and selectively applying one of first and second matrices to

the color components based on comparisons with first and second thresholds. Further, Sobol

does not teach or suggest applying an interpolation between the first and second matrix to the

color components of the pixel when all of the color components are between the thresholds. The

Examiner attempts to characterize the use of a set of matrices as meeting the interpolation

limitation of this claim. There is nothing in Sobol that teaches or suggests that the matrices used

in Sobol implement an interpolation function between two matrices. Therefore, claim 14 is not

anticipated by Sobol.

Claim 15 is directed to a "method of processing data contained in an array of pixels."

The method comprises:

> defining a threshold;
> defining a range around the threshold, the range having a top end and a
> bottom end;
> defining a matrix;
> (a) reading the color components of a pixel;
> (b) applying the matrix to the color components of the pixel when any of
> the color components are above the top of the high end;
> (c) modifying the color components of the pixel by interpolation when all
> of the color components are below the top end of the high range and at least one
> color component is above the bottom end of the low range, and; otherwise
> preserving the pixel.

Sobol does not teach or suggest "reading the color components of a pixel," "applying the matrix to the color components when any of the color components are above the top of the high end," and "modifying the color components of the pixel by interpolation when all of the color components are below the top end of the high range and at least one color component is above the bottom end of the low range." Therefore, claim 15 is not anticipated by Sobol.

Claims 16 – 20 and 22 depend directly or indirectly from claim 15 and are also allowable at least for the reasons identified above.

Claim 23 is directed to a "scanner." The scanner comprises:

> a photo sensor array for converting an image into an electrical signal;
> an A-to-D converter to convert the electrical signal into raw digital data;
> a first matrix and a second matrix, both matrixes for transforming the raw digital data for color components for each of a plurality of pixels adjacent a pixel into corrected color component for that pixel;
> the scanner configured to create the corrected color component for that pixel by selecting between the first and second matrix as a function of the raw digital data value.

Sobol does not teach or suggest a scanner with a first and second matrix that transform raw digital data for color components for each of a plurality of pixels adjacent a pixel into a corrected color component for that pixel. Further, Sobol does not teach or suggest a scanner that creates the corrected color component for that pixel by selecting between the first and second matrix as a function of the raw digital data value. Therefore, claim 23 is not anticipated by Sobol.

Claim 24 is directed to a computer readable medium containing a program for adjusting the data from the color components for pixels in a color image. The program is

> configured to modify the data from a color component for a pixel of the color image based on the data for the color components for the pixel using the matrix only when the data from at least one of the color components for the pixel is above a predetermined value.

Sobol does not teach or suggest a program that is configured to modify a color component of a pixel using a matrix based on the color components for a pixel when one of the color components is above a predetermined value. Therefore, claim 24 is not anticipated by Sobol.

Claim 27 is directed to a method of processing color image data contained in an array of pixels. The method reads "at least 3 color components for a pixel." The method applies a first matrix "to the color components of the pixel to create an output color component when the first color component is larger than the first threshold or the second color component is larger than the second threshold or the third color component is larger than the third threshold" and otherwise applies a second matrix "to the color components of the pixel to create the output color component."

Sobol does not teach or suggest applying first and second matrices under the claimed conditions to at least three color components for a pixel to produce a color component. Therefore, claim 27 also is not anticipated by Sobol. Withdrawal of the rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

Claim 21 was rejected under 35 USC § 103(a) as being unpatentable over Sobol (U.S. Patent No. 5,854,859). Applicant respectfully traverses the rejection.

Claim 21 depends from claim 15 and is also patentable at least for the reasons identified above with respect to claim 15.

Claims 25 and 26 were rejected under 35 USC § 103(a) as being unpatentable over Sobol (U.S. Patent No. 5,854,859) in view of Denber (U.S. Patent No. 5,214,470). Applicant respectfully traverses this rejection.

Claim 25 is directed to a "camera." Claim 25 calls for:

> a photo sensor;
> a lens system that forms an image on the photo sensor;

a matrix for mapping image data;
a processor configured to map color components of the image data only
when the image data from at least one color component exceeds a predetermined
value.

Neither of the references, alone or in combination, teach or suggest a camera that
comprises a matrix for mapping image data and a processor that maps color components of the
image data only when the image data from at least one color component exceeds a predetermined
threshold. Therefore claim 25 is not obvious. Withdrawal of the rejection is respectfully
requested.

Claim 26 is directed to a camera and calls for:

a lens system that forms an image on a photo sensor;
a means for mapping the image data;
a processor configured to map color components of the image data only
when the image data from at least one color component exceeds a predetermined
value.

Neither of the references, alone or in combination, teach or suggest a camera that
comprises a "means for mapping the image data" and a processor that maps color components of
the image data only when the image data from at least one color component exceeds a
predetermined threshold. Therefore claim 26 is not obvious. Withdrawal of the rejection is
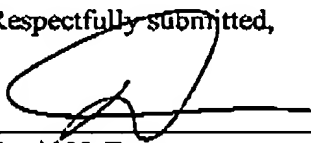respectfully requested.

CONCLUSION

Applicant respectfully submits that claims 1-27 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

Respectfully submitted,

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